

Dr. SEBASTIAN KRIEGER

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- About • I am a data scientist with a Ph.D. in physical oceanography, specializing in machine learning, data science, and geospatial data analysis. With over 20 years of experience, I combine scientific research with practical data analysis, applying advanced techniques to solve real-world challenges. I am passionate about leveraging machine learning to turn complex geospatial and temporal data into actionable insights.
- Research background • *Ph.D. in Physical Oceanography:* Focused on global ocean dynamics using satellite altimetry to study sea level anomalies and mesoscale eddies.
- *Postdoctoral research:* Worked on near-shore ocean observation and ocean color satellite remote sensing, integrating hydrodynamic and biophysical numerical models.
- Core expertise • *Machine learning & data science:* Expertise in building data pipelines and applying machine learning models for predictive analytics, anomaly detection, and regression tasks.
- *Satellite remote sensing:* Hands-on experience analysing satellite imagery (TOPEX/Poseidon, VIIRS, MODIS, SeaWiFS) and processing geospatial data using NetCDF, GDAL, and Geopandas.
- *Data integration & management:* Skilled in creating data workflows and pipelines for integrating diverse datasets, particularly large-scale scientific data.
- *Software development:* Proficient in Python, MATLAB, SQL, with experience using libraries like Pandas, NumPy, Scikit-learn, and PyTorch. Familiar with agile practices and version control (Git).
- *Collaborative work:* Experienced in working with cross-functional teams and mentoring junior colleagues.
- *International experience:* Dual citizenship (Brazilian and German), with the ability to work freely in both the EU and Brazil without visa restrictions.
- Language skills • Fluent in English and Portuguese.
- Conversational fluency in French, German, and Spanish.
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SELECTED WORK & RESEARCH EXPERIENCE

2018–present **Bloomberg**

São Paulo, SP

Senior data scientist / data engineer

Designed and implemented 30+ data workflows and ETL pipelines for global financial data processing, ensuring data integration and accuracy • Developed and deployed machine learning models to forecast trends, detect anomalies, and generate actionable insights from large datasets • Collaborated with journalists and economists to support data-driven research, tailoring insights and data visualizations for different audiences • Conducted data-driven research to enhance data product features, improving analytical tools for internal clients and enhancing overall product offerings • Mentored colleagues, promoting best practices in machine learning, software development, and agile methodologies.

2016 Rio 2016 Organising Committee for the Olympic and Paralympic Games

Rio de Janeiro, RJ

Sport Information Coordinator – Canoe sprint/para-canoe

Led a team of 10 volunteers, ensuring smooth operations in a fast-paced, high-pressure

environment • Coordinated the publication and distribution of sporting information, including results and official communications, ensuring accuracy and timeliness • Provided customer service to athletes, team members, and officials, responding promptly to queries and requests in a multi-language environment • Demonstrated a keen eye for detail in reviewing and distributing technical documents, as well as managing the setup of competition installations

2014–2016 **Centro de Biologia Marinha, Universidade de São Paulo**

São Sebastião, SP

Postdoctoral research fellow

Led data analysis using satellite remote sensing data (ocean color, altimetry) to study marine ecosystems and coastal dynamics • Applied statistical models to large-scale biogeochemical datasets to assess ecosystem health • Developed numerical models to simulate ecosystem responses to oceanographic changes, integrating satellite data with hydrodynamic models • Taught and mentored graduate and undergraduate students through lectures on data analysis and numerical modelling,

2009–2014 **Instituto Oceanográfico, Universidade de São Paulo**

São Paulo, SP

Sc.D./Ph.D. graduate student

Conducted advanced statistical analysis and signal processing on satellite altimetry data to study global sea level anomalies and mesoscale eddies • Developed a wavelet-based signal de-noising filter to detect and extract propagating features in satellite altimetry data • Used machine learning-based algorithms for feature detection and anomaly recognition in geospatial data • Led outreach efforts through short courses and workshops, sharing technical knowledge in Python programming and data analysis with students and professionals.

2008–2009 **Bermuda Institute of Ocean Sciences**

Saint George, Bermuda

Trainee/research scholar

Conducted independent research on the influence of large-scale ocean waves on chlorophyll concentrations, leveraging satellite imagery to identify patterns and analyse ocean dynamics • Participated in scientific research cruises aboard the R/V Atlantic Explorer and R/V Oceanus, contributing with field research and data collection to the Oceanic Flux Program (OFP) and Bermuda Atlantic Time-series Study (BATS) • Delivered research presentations and short talks to share findings with the broader scientific community, enhancing skills in knowledge dissemination and academic exchange • Nippon Foundation–Partnership for Observation of the Global Ocean (NF-POGO) fellow.

EDUCATION	2009–2014	Sc.D. Physical Oceanography <i>Instituto Oceanográfico, Universidade de São Paulo</i> Thesis: Mesoscale eddies, Rossby waves and the spectra from altimetry data.
	2008–2009	Pg.C. Ocean Observatories <i>Bermuda Institute of Ocean Sciences</i> Thesis: Nutrient pumping induced by first mode baroclinic Rossby waves in the Sargasso Sea.
	2006–2008	M.Sc. Physical Oceanography <i>Instituto Oceanográfico, Universidade de São Paulo</i> Thesis: Spectral variability distribution of baroclinic Rossby waves in the Atlantic Ocean and particularly in the region of the Abrolhos archipelago.
	2000–2004	B.Sc. Physics <i>Instituto de Física, Universidade de São Paulo</i>

SELECTED	Jun 2023	Scrum Foundations
COMPLIMENTARY		<i>Scrum Alliance</i> . Credential ID 001540195
EDUCATION	Nov 2021	AI Product Manager
		<i>Udacity</i> . Credential

- Apr 2021 Venture Deals
Kauffman Fellows & TechStars. Credential ID 10581-489738
- May/2014 Mini-school on Dynamical Systems in Biology
International Centre for Theoretical Physics, South American Institute for Fundamental Research
- Jan/2013 II Southern-summer School on Mathematical Biology
International Centre for Theoretical Physics, South American Institute for Fundamental Research
- Jan/2012 I Southern-summer School on Mathematical Biology
International Centre for Theoretical Physics, South American Institute for Fundamental Research
- Mar/2010 Southwestern Hemisphere Workshop Series on Climate Change: CO₂, the Biosphere and Climate
International Centre for Theoretical Physics, Universidad de Buenos Aires
- Jan/2010 Use of Remote Sensing and Geographical Information Systems for Studying Marine Biogeochemical Cycles and Ecosystems
Austral Summer Institute X, Universidad de Concepción

TECHNICAL SKILLS	Open source	pycwt : Free and open source Python module for spectral analysis and statistical significance tests using the continuous wavelet transform (CWT).
	Machine learning	Scikit-learn, PyTorch (basic), TensorFlow (basic), Hugging Face (basic), regression, classification, clustering, time-series analysis.
	Geospatial tools	NetCDF, GDAL, Geopandas, QGIS for spatial analysis, satellite image processing and geospatial data visualization.
	Data analysis	Pandas, NumPy, SciPy for statistical modelling, time-series analysis, and data visualization.
	Computer programming	Python, MATLAB, SQL.
	Data pipelines	Experience designing and managing ETL processes and workflows for large datasets.
Version control & development		Git, test-driven development (TDD), continuous integration/deployment (CI/CD) in agile environments.

SELECTED PUBLICATIONS	<ul style="list-style-type: none"> • Krieger, S., K. Nimit, S. Sarker, W.E. Panassa, and L.A. Krug. 2025. Impact and insights from the NF-POGO Centre of Excellence in Observational Oceanography: A trainee perspective. <i>Oceanography</i> 38(1):26–28, doi.org/10.5670/oceanog.2025.128.
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OTHER INTERESTS	Volunteering	Online mentor for early-career marine scientists (Trevor Platt Science Foundation , 2022–present). English tutor for young adults (<i>Cidadão Pró-Mundo</i> , 2019–present).
	Rowing	National and continental rowing umpire accredited by <i>Confederação Brasileira de Remo</i> (CBR) and <i>Confederación Sudamericana de Remo</i> (CSAR).
	Hobbies	Woodwork, sourdough baking, cycling, music (guitar, bansuri flute).